Space Weather Forecast

Issued on Monday, 22 August 2022 at 13:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance G1 Minor Storms Day 1 or 2 (22nd/23rd).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity is Low, with six sunspot regions on the Earth-facing disc. A number of common class flares were observed, a couple of which were from the previously active region in the southwest quadrant, which has now rotated off the disc. The other remaining flares came from a developing region in the northwest quadrant. This region is now the largest and most complex region on the disc, with growth in the number of spots, size and complexity over the past 24 hours.
No Earth-directed CMEs (coronal mass ejections) were observed.

Solar Wind / Geomagnetic Activity: The solar wind speed persisted at elevated levels, generally around 550-600 km/s, due to coronal hole fast wind and CME influences. The total magnetic field strength was generally weak, with the north-south component variable but also relatively weak. Geomagnetic activity was generally Quiet to Unsettled (Kp2-3), but an Active (Kp 4) interval was observed 21/1500-1800 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Very Low, but with a slight chance of increasing to Moderate. The developing sunspot in the northeast quadrant is the most likely source for this activity.

Solar Wind / Geomagnetic Activity: Current elevated solar winds have the potential to see further enhancements due to further arrivals of fast solar wind on day 1 or 2 (22-23rd), along with a further CME glance that is possible later day 1 or possibly day 2. This CME left the Sun on the 19th due to a Moderate flare from the recent active sunspot. This arrival is low confidence however. Day 3 and beyond is then likely to see these elevated winds gradually ease with no further enhancements forecast. Geomagnetic activity is forecast to be Quiet to Unsettled, with a chance of Active intervals day 1 and 2 (22nd and 23rd), but with a chance of rising to Active to Minor Geomagnetic Storming due to any CME or fast wind arrivals. Activity easing to Mainly Quiet with Unsettled intervals possible day 3 and day 4 (24th and 25th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	40	30	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	2	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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